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Thanking the students of the TECH for past favors, I shall endeavor to merit a continuance of the same.

S. GRANT SMITH,

BOSTON, U. S. A.

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Y the lack of sympathy which the Faculty has always shown for our athletics of all kinds, it would seem that they disregard or hold in light esteem the benefits derived from healthy exercise.

A certain amount of recreation and relaxation of the mind is absolutely necessary to make a successful student. The question is, whether it is better to obtain this required rest by playing tennis or ball, or by playing cards and billiards, and going to the theatre. It is surely better to be storing up health and energy for future use, than to adopt the latter course, which, though generally considered harmless, cannot claim decided advantages.

It is safe to say that the Techs enter less into field sports, and patronize the theatres more freely than the great majority of students. It is also true that the Institute stands almost or entirely alone in having no grounds for outdoor sports, not even the available space between the buildings is utilized, but is carefully wired up

and posted; and it was not until the students took the matter in hand, and bore a large part of the expense, that we got a gymnasium.

The Union grounds would serve the desired purpose admirably, and at present could probably be bought or rented at a reasonable rate. The Base Ball Association now rents them at five dollars an afternoon; thus, what students elsewhere have free has to be kept up by us at quite a severe expense, and only a few are benefited thereby.

The majority would be willing to subscribe towards purchasing grounds, but they could hardly be expected to bear the whole burden.

The Faculty ought to be willing, either by themselves or in co-operation with the students, to take action in this matter, for it is fast becoming a necessity; and it may be, in a degree, a means of substituting healthy for unhealthy recreation.

AT the beginning of each year there is a great worry and loss of time to students, especially to Freshmen coming from a distance who are unfamiliar with Boston, in selecting rooms and boarding-places for the winter. The plan adopted by the Faculty, of having nothing to say or do in the matter, has great advantages over the system of dormitories, or compulsory boarding-places, in many other colleges; but its drawbacks are manifest.

The expenses where students are clubbed together are decidedly less than where each one is for himself. According to the catalogue, good board may be obtained in and around Boston for six to eight dollars a week, but the majority of students find that it amounts to decidedly more than that. Out-of-town board is cheap, but the time lost in going back and forth and the car fares, in most cases, overbalance this.

Usually, it is desirable to change quarters once in every one or two years. The student gets tired of his room or fare, or the landlady gets tired of the student, and wants to try a change. It is not the custom to engage quarters one spring for the next fall, for it is generally preferred to await the advent of the annual reports; so it is necessary to come back several days before the beginning of the term, stop at a hotel, and perhaps right in the midst of condition examinations, plod from door to door to find a boarding-place. Boarding-house keepers and rooms are looking their best, and it is impossible for a new hand to judge what kind of a place he is engaging, and is expected to retain, for the year. Most of the "six to eight dollar" places convenient to the Institute deteriorate rapidly as to food; so wise boarders get a good room and take their meals out, and can change readily whenever the fare grows tiresome. The advantage claimed by philanthropists for this system, over dormitories is that the living in small families has a better moral effect than living together in large numbers. Although this is so, it must be remembered that it is only a lucky few who get into families with whom they desire to become intimate.

If numbers continue to increase as they have done during the past three years, the question of economic board will become very important. The erection of dormitories where cheap, comfortable rooms and good fare can be obtained seems to be the best provision; for instead of the majority of students living in and around Boston, as formerly, they come from all parts of the United States.

If, for any reason, dormitories are not feasible, a bureau of information ought to be established at the Institute, where a student can get reliable references; thus loss of time may be prevented. The bureau could easily obtain the necessary information from students leaving school, and from descriptions sent in by the boarding-house keepers.

ALREADY the shadow of the coming annuals has begun to darken the bright and hilarious days of class-dinners, Senior balls and Glee

Club receptions. The weary Seniors are grinding out their theses; the Junior begins to burn the midnight oil over his applied mechanics; thoughts of the grand ordeal in physics intrude, like nightmares, into Sophomoric dreams; and chemical equations disturb the sweet slumbers of the Freshmen. That examinations are an evil, all alike agree.

We ourselves do not pretend to be able to suggest a remedy for the present defective examination system, but content ourselves by stating two theorems. First, examinations are a necessary evil, which is apparent to all undergraduates; and, second, examinations do not examine, for there is too large an element of chance in them.

And, after expounding the above theories, we pass by the bulletin boards whereon are posted the lists of examinations, which seem to grin down at us and grimly ask what we are going to do about it.

IN a school of such practical scope and importance as the Institute, we are somewhat surprised to find so little provision made for students who cannot afford the expense attending a course of study here. According to the catalogue, there are only three scholarships for undergraduates; and of these one is confined to those who come from the English High School, while none are open to students until they have been at the Institute at least one year. Doubtless there are many whose tastes and talents would naturally lead them to pursue an Institute course, but whose circumstances are such that they positively cannot afford to do so; and hence, they go at once into business, and give up altogether the idea of further study.

Now, in most of our colleges, there are scholarships for which all students of small means may compete, both on entering and throughout the course. Moreover, it is proved beyond a doubt that in almost every case the students securing them are the ones that profit most by their connection with the school. Is it not even more important that as ample provis-

ions in this respect be made in an institution like our own, whose purpose it is so to train its students that on graduation they may be prepared at once to take up and pursue intelligently some practical scientific vocation? Perhaps it is thought that our unusually long vacation in summer may give the students ample opportunity to acquire the means of supporting themselves during the school year. But he would be a remarkably smart man who, if dependent on his own resources, could earn enough in the four months of vacation to pay his way through the other eight; and certain it is, he could not do outside work during the school year and do justice to his studies at the same time. Thus it is evident that the Institute is really closed to the poor man, unless he can get help from his friends, or from the school itself.

The catalogue shows us that the opportunities for a free course of study for graduates are more abundant, for five scholarships are open to those who wish to pursue post-graduate courses. While these are very useful, it seems as if at least the same number should be open to the students of each of the four years. It seems to us that in no better way could friends of the Institute benefit the same than by founding scholarships that will enable young men, rich in brains but poor in purse, to enjoy the opportunity of a technical education without expense, providing they first prove their ability to profit thereby.

The Tech Dinner.

EVERY thought of business or literary toils was banished from the minds of the directors and editors of THE TECH, as they gathered at Young's, Saturday evening, April 25, for their annual dinner. A half-hour's wait for late comers was all that could be borne, and the last arrival joined the party on its way to the dining-room in time for the blessing and half shells. Much regret was expressed at the enforced absence, in Baltimore, of Pres. Alexander R. McKim; all others who have served on the official staffs this year were present.

The dinner was up to Young's usual standard, and heartily appreciated by the hard-worked journalists. The menu card was a fac-simile of the cover of THE TECH, quarter size, the list of editors and directors on the back, and the menu and list of toasts in the interior, with the hint that the time for subscribing had now arrived. The toasts were four in number, as follows:—

"THE TECH," Thomas W. Fry; "The Situation," H. C. Spaulding; "Our Future," W. R. Ingalls; "Our Grievs," F. W. Hoadley. After the remarks on these subjects, in which THE TECH's past struggles, present satisfactory condition and bright prospects were discussed, the piano was opened and singing indulged in, followed by poems, anecdotes, and stories from various members, affording amusement until about eleven, when the assembled guardians of THE TECH's destiny separated.

It was acknowledged that there are some pleasant duties connected with official position, as "for instance,"—and that these duties are what compensate for other less pleasant ones in the profession of journalism.

Witchcraft.

THEY say witchcraft has passed away,
That charms and spells are things forgot;
That superstition 's had her day,
Perhaps 't is true, but I think not.

'T is true the old-style witch we spurn,
With tattered gown and aged mien;
Who witched a cow or else a churn,
'T is true that she 's no longer seen.

But yet, I think, there 's one I know,
Possessing charms that work a spell,
And eyes that do bewitch men so —
Is she a witch? Ah! who dare tell?

If she is not, whence comes her power
To work enchantment with her smiles?
Does Cupid all these gifts down-shower,
To aid his work, his numerous wiles?

You cannot answer, then I say,
Though time has changed the witches' ways;
That witchcraft has not passed away,
And charms are still worked nowadays.

F. W. H.

Coal Miners.

WE were seven in number, and with one exception '87 in class. We started with Prof. Crosby, on his trip to Smithfield, R. I., on last Fast Day.

When we started there was no apparent difference between us and any of the others of the party; but as we returned, blind must have been the man who knew us not.

"Pawtucket, change to barge for Smithfield and way stations." Yes, willingly, but in what a pouring rain! The covered barge kept us fairly dry, and by the time we reached the Valley Spring Mine, the rain had ceased. We all got out and examined the daylight workings of the mine.

The coal, which is very soft anthracite, is heated by steam in order to have it perfectly dry to pulverize. The powder, ground very fine, is packed in barrels, and sent away to be used in foundry facings and also for the glossy stiffening to cambric. This product is also used to adulterate graphite.

An opportunity was offered to descend by the inclined shaft, and we seven stepped forward and prepared to descend. I said prepared, but if we had properly prepared ourselves with old garments, this little piece never would have been written. We simply took miners' oil lamps in our hands, and jumped into the shaft to begin the descent. We had gone but a few steps, when a faint-hearted member of the party wished to return on account of the uncertain, slippery footing. "No, no," we cried, "let us see the place out. Down we pitched, through deep, black mud, till at last we reached comparative level. Now the question was, which path? We heard nothing of the "two miners," who we were told were in the mine. We chose the path which had the track in it, and started for unknown regions.

We were obliged to bend nearly double to proceed, which we did as fast as possible, till we came to a central chamber, with cuts radiating from it. While we stopped for breath, we chanced to look back, and saw a light appearing along the path we had been travelling. Soon

the owner of the same drew up, and we beheld the cheery little above-ground miner who had started us on our downward way.

He brought us the astonishing news that those who had not come down were ready to start and wanted us to return. "No, indeed," we said, "we have not got wet and dirty for nothing, we are going to see the mine, and they can wait till we get back."

We then put ourselves under the guidance of our dark friend, who informed us that he "Was as white as we were when he was clean." We hoped that we were not as dark as he was, even if we did not feel perfectly clean.

Our guide conducted us along a low, winding cut, toward the miners; he said he wanted to find them first, in order to find out from them what we could see. The cut along which we were going was barely wide enough for the eighteen inch track, and just high enough for us to crawl along. It was covered on the bottom with a thick layer of dirty, black mud. We were following our guide at a pretty fair speed when suddenly we were stopped short, hearing a deep, low rumble. We six held our breath, not knowing what was coming next. The seventh member of our party, who was an English newspaper correspondent, geologist, and scientific bummer generally, cried out, "The Lord preserve us! Say your prayers, and prepare to die." But our guide comprehended our real danger, and shouted, "Turn around and go the other way as fast as you can. They are going to blast and are rushing the car." It seemed as if we never could get turned around and started on a retreat, and when started our feet stuck so in the mud that we did not appear to gain much ground. Nearer and nearer came the miners with their thudding car. We tried to hurry, splashing through the mud. One unfortunate lost his hat, by reason of too close contact with the roof of the tunnel, and jumping to save the hat lost his lamp. On, through sloppy mud, in darkness. It seemed now a mile, where before had been a few steps. At last we reached an opening, the miners drew up their car, and we breathed again. The miners had

taken us for Micks and so rushed us much farther than was necessary. They apologized, however, when they discovered who we were.

Nothing was now too much to atone for their mistake. We were shown from one place to another. Fossil ferns, caves, dangerous passes, were all examined. We climbed over great boulders, and crawled on our digestive organs through small holes.

They offered to show us "places fifty per cent worse." "For God's sake, don't," said our English friend, "we have had enough." Indeed, by this time we were all ready to see daylight once more, so we retraced our steps to the shaft, and climbed toward the ever-enlarging spot of daylight. As we emerged, one by one, we were received with laughter by the clean geologists. The lost hat, which had been recovered, and the light pants, which will never recover, were the objects of most merriment.

We washed in miners' water, and then called our black faces clean. After taking up a collection for the miners, our English brother passed the hat, we started again after minerals. Even the deep road mud and consequent heavy wheeling seemed tame to us after our morning's experience.

All through the day we were objects of special attention, and were dubbed "coal miners," over and over again. On the train coming home, we were curiously scanned whenever we entered a car. Then a general smile appeared on the passengers' faces. At last, however, we found a safe retreat on the rear platform, where we amused ourselves with the tintypes which we had had taken on our return to Pawtucket. It is needless to add that we left the train at the "Know Nothing," and did not go down to the B. & P. station.

F. P. G.

Waxing and Waning.

THE fickle moon doth change from night to night;
Its only rival is a woman's heart.
And in them both one thing we'll always see;
The sad face of a man doth play a part.

J. E. S.

Pumps and Pumping Machinery.

MECCHANICAL means of raising and moving water or other fluids are necessary in a great variety of works, among which may be mentioned water supply, sewerage, drainage of mines, oil lines, and operations of a similar character. To meet this want we have the various kinds of pumping engines such as are in use at the present time. A brief consideration of these various forms with reference to their principal features, cost and economy in working, may merit a moment's attention.

The various kinds may be conveniently divided into two classes: rotative or fly-wheel engines and direct acting engines. Either class of engine may be single or double acting, according as the steam is admitted on only one side or alternately on both sides of the piston. In the rotative engine the steam is cut off at a certain fraction of the stroke, while the remainder is finished by expansion, aided by the momentum of the fly wheel, thus producing greater economy of running at the expense of more intricate machinery. The direct acting engine usually allows the steam to follow the piston throughout its stroke, thus preserving greater simplicity and compactness in working parts, but less economy in operation. Both rotative and direct acting engines are sometimes made as beam engines, this being common in rotative engines. With these few elementary facts in view the principal features of the various classes may be briefly discussed.

The rotative engines are either vertical or horizontal in operation. They require expensive and massive foundations to absorb the shocks and jars incident in their working, and this is especially true of vertical engines. The expense of foundations is frequently as large as that of the engines themselves. They are the most economical working engines in the mere point of running expenses, such as fuel, but require constant attention and care, and often considerable outlay for repairs. The momentum of the fly wheel in its revolutions frequently increases to a large extent the accidents that otherwise would be trifling. The dropping of

a pin or catching of a valve has thus produced serious damage and made necessary, expensive repairs. Thus, briefly, we see that the fly-wheel engines are expensive in first cost, foundations, and repairs, and liable to serious accidents, but the most economical in running.

The more modern direct acting pumps present a marked contrast to the fly-wheel engines. They are horizontal in action, and the steam and water pistons are situated at the opposite ends of one and the same horizontal piston rod, the essential feature of this class. They thus present a much simpler and more compact form than the fly-wheel engines. The foundations required are much lighter and less expensive, and indeed the pumping engine and plant frequently cost only about one fifth of that of a rotative engine of the same capacity. The economy of running is, however, much less than that of the fly-wheel engine. The simple type of direct pumping engine is rather uneconomical, and various additions and improvements have been made to increase its effectiveness, but none have reached within much more than half of that of the fly-wheel engines.

A brief consideration of the more important improvements may well be given a place. One of the most important modifications consists in what is known as the "duplex" form. This is essentially two pumps placed side by side which work alternately, and by such alternation produce a much steadier and more continuous discharge. All horizontal pumps are of necessity double acting, and the alternation of the pumps is so arranged as to move the necessary mechanism for admission of the steam to each side of the steam piston, so that one pump works the other.

Another very important improvement is the compounding of the steam cylinders. Two cylinders are thus provided at the steam end of the piston rod, one worked by direct pressure and the other by the expansion of the steam exhausted from the first cylinder. About twenty-five per cent has been estimated to be gained in power by such compounding.

A third modification consists in the addition of a condenser, which by condensation of the

steam produces a vacuum in the rear of the piston at the same time the steam is pressing on its front. This adds from twenty to fifty per cent of power. We thus have in the compound condensing duplex pumping engine the most modern type of this class of machinery.

The advantages and disadvantages of the direct acting may be, therefore, stated as follows: They are vastly cheaper in first cost, foundations, and repairs, than the fly-wheel engines. They give, however, only about half the efficiency for fuel used, as given by the rotative. They are, however, able to work at any length of stroke, and thus suffer but slightly from any stoppage of parts. They do not require extensive repairs. The difference between the rotative and direct acting engines consists in any given case, therefore, in the first cost, cost of foundations and repairs, liability of damage, and economy of operating.

The method of ascertaining the cost of operating consists in finding the "duty," so called, of the engine, or the work done per one hundred pounds of fuel in foot pounds. The duties thus assigned in tests are, however, never realized in ordinary use. By far the greater portion of pumping engines are necessarily built for a much larger capacity than they will be subjected to when in ordinary use. Such pumps must run to their full capacity to work economically, and when tested for duty, they are so run, but when in actual daily use their duties fall much below the recorded tests. This is true of all pumping engines, but especially of fly-wheel engines. A duty test thus does not generally show the ordinary efficiency, but the maximum possible efficiency at the full capacity of the pumping engine.

The question which class of engine is the best, must necessarily depend on the character and constancy of the work to be done. The question which must be answered in every case is, which class will give a minimum cost of operating and interest on the investment combined. Cost of operating must include repairs as well as mere running expenses. The rotative engine gives a high duty, and consequently a low cost of

running; but its first cost and repairs are expensive, and involve a large outlay in investment. The direct acting engine requires a larger running expense, but a much smaller investment. The answer to this question depends, as above stated, upon the work to be done, but may be replied to for almost every case in favor of the direct acting. The conditions necessary for favorable working of the rotative engine must be a large amount of water to be pumped constantly and continuously. Whenever these conditions are much departed from, the direct acting can do the work cheaper, because requiring less interest on investment involved and on repairs. There are, it is believed, only three cases on record in which the rotative pumping engines are cheaper in the end than the direct acting.

Various forms of direct acting pumping engines are made, designed especially with reference to the work to be performed. In cases where pumping is required at irregular intervals only, such as in fire pumps, for example, the most economical engines are those whose first cost is least, and generally, high-pressure pumps are used, without compounding or condensation. When more regular action is required, the work can be done more economically by pumps whose steam cylinders are compounded, and in which condensation is employed. The regularity and constancy of the work to be done thus exercises an important control over the most economical class of machines for any given case. In all cases, the cardinal rule to be followed is: Do the work as economically as possible, first cost and expense of operating considered.

For the determination of the size and class of steam pumping engine necessary in any given case, the following data is required: A careful determination of the daily quantity to be pumped, or the maximum quantity in any given time, the constancy and regularity necessary in pumping, the use for which the pumps are required, the height to which the fluid is to be raised, the length, size and maximum elevations and depressions in the pumping main, and the nature of the fluid to be pumped, whether hot or cold, clear or turbid, water or other fluid.

With such facts, designs and estimates can be furnished for any given case by any reliable pump firm. Such estimates are usually made for the pumping plant, so called, which generally includes pumping engines, boilers, feed pump, and all connections within the pump house and above the foundations.

The Moon Island Sewer.

AN invitation from the Department of Improved Sewerage of this city, to visit the pumping station at Dorchester and outlet at Moon Island, having been extended to the Senior Civils, a very enjoyable excursion was made Monday afternoon, April 20. The party, consisting of the Senior Civils with Mr. Sewall, were met by Mr. Stearns of the Improved Sewerage Department, who accompanied them and explained the various arrangements.

The first point visited was the pumping station at Dorchester. Here the sewerage is delivered through a ten and one half foot sewer from the intercepting sewers to the pumps. The first building reached is the filth hoist, where are arranged four iron cages which strain the sewerage and remove all matter which would obstruct the pump valves. Notwithstanding the large quantity passing these cages, some 25,000,000 gallons per day, the quantity of matter thus collected is only about one half a cubic yard per day, and is not especially offensive, consisting of paper principally. From the filth hoist, the conduits and machinery are duplicated throughout, to the entrance of the tunnel. The sewerage passes from the filth hoist to the pump well, beneath the pumps, which are below low tide.

Four pumping engines are at present provided in the pumping station, and are employed in raising the sewerage to a height sufficient to deliver it at Moon Island, making a lift of about thirty-six feet. The pumping engines consist of two Leavitt vertical compound beam and fly-wheel engines, each working two single acting plunger pumps; and two Worthington compound, duplex condensing engines. Each Leavitt engine has a nominal capacity of 25,000,000 gallons per day, a stroke of nine feet, and a fly

wheel thirty-six feet in diameter, and weighing thirty-six tons; each costs about \$115,000. One of these engines is constantly worked in pumping the sewerage. The Worthington engines are used entirely as auxiliary aid in disposing of the storm water, and have a capacity of 25,000,000 gallons each. They cost \$45,000 apiece. A more marked contrast between these two engines of the same capacity for work could with difficulty be found elsewhere under the same roof. The Leavitt, tall, gigantic, with ponderous fly-wheel and machinery, resting on massive foundation, reaches almost to the roof; while the Worthington, reaching only half-way up the foundations of, and shorter than the width of its tall neighbor, looks like a mere pygmy by its side. Power is furnished the pumps by four steel boilers of two hundred and fifty horsepower each, one being sufficient for ordinary use.

The pumps deliver the sewerage by forty-eight-inch force mains into the tank sewer which runs from the pumps to the entrance of the tunnel, a distance of twelve hundred feet. These tank sewers are two conduits, eight by sixteen feet, and run level throughout their length. At the end is placed a stop weir of plank, which keeps seven or eight feet of depth in the conduits. This allows the sediment, such as road dust, to settle, and this deposit is drawn off at the end and loaded into scows to be dumped in the harbor. Leaving the tank sewers, the sewerage falls vertically one hundred and fifty or sixty feet down into the tunnel under Dorchester Bay. The tunnel is laid mostly through rock, and is circular, being about seven and a half feet internal diameter.

Leaving the tunnel, the sewerage passes over Squantum Neck and reaches Moon Island by a sewer placed in an embankment.

The party, leaving the pumping station, boarded the tug belonging to the works and steamed down to Moon Island. Here are situated the storage tanks which store the sewerage till the right stage of the tide is reached for the discharge.

The reservoir is divided into four compart-

ments, each having four inlet and outlet openings. Along one end of the tank runs a long gate-house, in which are arranged the gates to the outlets and inlets. By gearing and shafting, all of the gates are connected with a power pump and a turbine, both of which are connected with the sewerage and are run by its power. The turbine is generally used for opening and closing the gates.

The reservoir is discharged twice a day, after the tide has ebbed for about an hour. The two discharge sewers are twelve by eight and a half feet, and eight by eight and a half feet, respectively. They extend about six hundred feet beyond the reservoir into the sea.

About 4:26 P. M., being the time for discharge, the turbine was started, and descending into the space over the outlet sewers at the reservoir, the roaring and rushing of the sewerage soon began in earnest. The dim light of the lantern showed only a line of foam issuing from the tops of the outlet sewers. The whole 25,000,000 gallons is frequently discharged in about half an hour, or nearly 1,000,000 gallons per minute. Journeying to the end of the outlet sewer, the sewerage could be seen rushing out with the tide towards the mouth of the harbor, where it becomes so diluted and disseminated as to be completely lost in the boundless and immeasurable old ocean.

The Red and the White Billiard Balls.

A FABLE.

Two balls upon a billiard-table quarrelled one day as to which was the handsomest. While they were in the midst of their dispute, a man chanced to come up to the table, and picking up a cue made ready to play. "Oh, shoot the red ball," said the white one, in a sarcastic tone of voice. "Don't you dare come near me, you horrid thing," replied the red ball; "if you do I'll *scratch* you." "Ha! ha! you just wait," cried the white ball, in a loud tone. The man shot the white ball and it hit the red one with great force. This made it very angry, and it bounded off toward the cushion, but suddenly it rolled

back and *kissed* the white ball with a loud smack.

Moral. — Always forgive your enemies. Kiss and make up. F. W. H.

Base Ball.

TECHS. 5 ; BROWNS, 2.

PROVIDENCE, Tuesday, April 21. — The game was finely played throughout, on the part of the Techs. The work of the battery was remarkably good, and also the playing of Douglas and Sturges. The Browns were superior in batting, but weaker in fielding than the Techs. The score : —

TECHS.

	A.B.	R.	B.	T.B.	P.O.	A.	E.
Twombly, 3b.	4	1	0	0	0	0	0
Carleton, s.s.	5	0	0	0	1	1	1
Douglas, 2b.	5	1	1	1	2	1	0
Thomas, p.	5	0	1	1	2	15	1
Clement, c.	5	1	2	2	13	0	3
Kimball, r.f.	5	0	2	2	0	0	0
Sands, l.f.	4	0	0	0	0	0	0
Sturges, 1b.	4	1	1	2	7	0	0
Kirkham, c.f.	4	1	0	0	2	0	0
Totals	41	5	7	8	27	17	5

BROWNS.

	A.B.	R.	B.	T.B.	P.O.	A.	E.
Chase, 1b.	5	0	1	1	5	0	0
Seagraves, c.f.	5	0	2	2	1	0	1
Gunderson, p., r.f.	5	0	0	0	0	11	2
Clark, c.	4	0	0	0	19	1	3
Rhett, l.f.	4	1	1	1	0	0	0
Murphy, r.f., p.	4	0	2	2	0	9	1
Hutchinson, s.s.	4	1	4	6	0	1	5
Harris, 2b.	4	0	0	0	0	1	1
Willis, 3b.	4	0	0	0	2	0	2
Totals	39	2	10	12	27	23	15

Innings	1	2	3	4	5	6	7	8	9
Techs.	1	0	2	2	0	0	0	0	0—5
Browns.	0	0	0	2	0	0	0	0	0—2

Earned runs — Browns, 1. Two-base hits — Hutchinson, 2; Sturges. First base on balls — Techs, 2. First base on errors — Techs, 10; Browns, 2. Struck out — Techs, 18; Browns, 12. Passed balls — Clement, 1; Thomas, 1. Wild pitches — Thomas, 1. Time, 1 hour 45 minutes. Umpire, Macintire.

HARVARDS, 19 ; TECHS, 5.

CAMBRIDGE, April 25. The game was lost to the Techs by poor playing by the in-field, especially by the bad throwing from short stop and second base to first base. The out-field was somewhat

stronger than in previous games. Thomas's pitching was far from being as effective as usual, fourteen hits being made off of him. Clement's fine catching, and a three-base hit by Twombly, were the only features of the game on the part of the Techs. In batting, the nine showed a marked improvement. The following is the score : —

TECHS.

	A.B.	R.	B.H.	T.B.	P.O.	A.	E.
Twombly, 3b.	5	2	2	4	1	3	3
Carleton, s.s.	4	1	0	0	2	1	3
Douglas, 2b.	4	1	1	1	1	2	3
Thomas, p.	4	1	3	3	1	11	7
Clement, c.	4	0	1	1	11	1	3
Kirkham, c.f. l.f.	3	0	0	0	1	0	0
Kimball, l.f., r.f.	3	0	0	0	1	1	0
Bush, r.f., c.f.	4	0	0	0	0	0	0
Sturges, 1b.	4	0	1	2	6	0	1
Totals	35	5	8	11	24	20	20

HARVARD.

	A.B.	R.	B.H.	T.B.	P.O.	A.	E.
Beaman, 3b.	6	4	2	2	1	3	0
Allen, c. and l.f.	5	3	3	4	6	0	0
Nichols, p. and c.f.	4	5	3	10	3	7	5
Foster, r.f.	6	1	1	1	0	0	0
Litchfield, 2b.	5	1	1	1	2	2	0
Smith, 1b.	5	2	3	6	9	0	0
Jones, l.f. and c.	3	1	0	0	6	0	3
Edgerly, s.s.	5	1	0	0	0	1	4
Winslow, c.f. and p.	5	1	1	1	0	4	1
Totals	44	19	14	25	27	17	13

Earned runs — Tech, 1; Harvard, 7. 2-base hits — Tech, 1; Harvard, 2. 3-base hit — Tech, 1. Home runs — Harvard, 3. Base on balls — Tech, 6; Harvard, 3. Bases on errors — Tech, 14; Harvard, 5. Struck out — Tech, 10; Harvard, 10. Passed balls — Tech, 2; Harvard, 3. Wild pitches — Tech, 2; Harvard, 2. Time, 2 hours, 27 minutes. Umpire, T. H. Donovan.

UNION GROUNDS, Friday, May 1.

TECHS v. BOWDOINS. — The game was played in a drizzling rain. Notwithstanding, the fielding was very good, and several fine plays were made; notably, a catch of a hot liner by Twombly, who made a double play thereby, and a fine catch by Kirkham. After the first inning, the Bowdoin were unable to bat Thomas, but made two additional runs through errors of the Techs. The game was called at the end of the fourth inning, with the score: Bowdoin, 4; Techs, 2.

The nine has much improved in play, lately, especially in batting and in the out-field.

Poem.

Dedicated to Gen. Pratt by the Chelsea Seashore Invincibles, 1855.

ALL hail, great Pratt, all hail to thee,
While these few lines we write to thee.
May you on the American eagle's wing soar
And reach the Presidential seat as men of yore.

All hail, great Pratt, to thy great name,
May thy aspirations never be in vain;
May thy great deeds to thy country be known,
May fortune reward thee, drone of her own.

Long, long may we hail, the great traveller to speak,
A man who wants office enough not to seek,
A man who with joy we elect to the chair,
And when the time comes, we all hope to be there.

Great traveller, thy deeds to the world are known,
Even to Queen Victoria on her magnificent throne;
The Czar of Russia has heard of thy great name,
The world is resounding with thy great fame.

Thy paper, the *Gridiron*, will make men quake
Who have been seeking for office for money's sake;
Thy paper will lay the foundation of thy great name,
See, hail, great Pratt, for thy everlasting fame.

When thou diest, a monument will be erected to thee,
Which will be read of in history o'er the sea;
The winds will waft it to every clime,
Thy name will be read of till the end of time.

[Gen. Pratt called into our office the other day and left us the above statement of his fame. — EDS.]

Noticeable Articles.

ASIDE from the papers relating to the impending war noticed in the last number of THE TECH, the most interesting article in the *Contemporary* is Mr. Matthew Arnold's "Comment on Christmas." Its tone may be gathered from the opening sentences: "It is a long time since I quoted Bishop Wilson, but he is full of excellent things, and one of his apothegms came into my mind the other day as I read an angry and unreasonable exposition addressed to myself. Bishop Wilson's apothegm is this: *Truth provokes those whom it does not convert.* 'Miracles,' I was angrily reproached for saying, 'do not happen, and more and more of us are becoming convinced that they do not happen! nevertheless, what is really best and most valuable in the Bible is independent of miracles. For the sake of this, I constantly read the Bible myself, and I advise others to read it.'"

In the same number is an extremely interesting paper by the eminent Belgian economist, Mr. Emil de Laveleye, on the fundamental question of "Political Science," the proper sphere and function of the state. It is a criticism of Mr. Herbert Spencer's recent pamphlet, "The Man

u. the State," and a brief rejoinder from Mr. Spencer is appended. The reading of such papers as these is a very profitable exercise for all students who feel an interest in acquiring some knowledge of the drift of current speculation on the great science of government.

Mr. Robert Louis Stevenson writes on "Style in Literature," and he is certainly qualified to write on the subject, by the possession of a very charming style of his own, as those know who are acquainted with his pleasant book. Whatever may be thought of the amount of light he throws upon it by his article, he certainly shows a just appreciation of some of the faults of a writer who is often taken as an eminent example of excellence, when he speaks of "the player on the big drum," the "incomparable dauber," Macaulay.

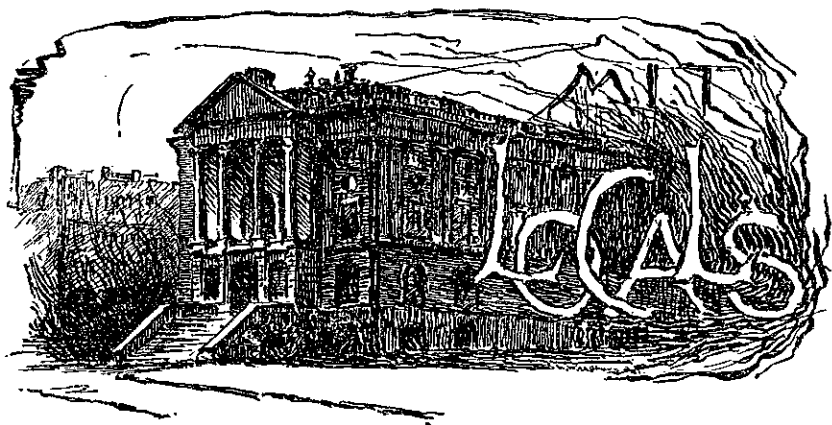
STUDENTS of art will be interested in a paper in the *Nineteenth Century* by Dr. Waldstein, on the true meaning of the figures on the Eastern pediment of the Parthenon; and students of astronomy, in a paper by the eminent English astronomer, William Huggins, giving an account of the attempts that are making to ascertain the true nature of the "Sun's Corona." Mr. Andrew Lang, who has just published such an interesting book on mythology ("Custom and Myth," Harper & Bro., 1885), writes in favor of a comparative study of ghost stories, "From the Eskimo, Fuegians, Frjians, and Kurnai to Homer, Henry More, Theocritus, and Lady Betty Cobb, we mortals are 'all in a tale,' and share coincident beliefs and delusions."

THE *Fortnightly* contains an interesting paper on Albainia and its picturesque inhabitants, a country which always recalls to memory the Second Canto of "Childe Harold," and which may yet make a figure in some future settlement of the Eastern question.

W. P. A.

IN the May *Century* more space than usual is devoted to the war articles, sixteen extra pages being added to the regular number for this purpose. Of first interest is Gen. Badeau's paper on "General Grant," as a soldier, which covers the whole period of Gen. Grant's military experience. The frontispiece of the number is a portrait of Gen. McClellan, who contributes an article on the "Peninsular Campaign." In addition to these are several other war papers of equal interest. All are illustrated with careful maps and pictures of places and incidents, and numerous portraits. The rescue of "Greely at Cape Sabine" is the subject of an interesting paper by Ensign C. H. Harlow, of the rescue ship "Thetis." Mr. E. C. Stedman's paper on Whittier is the important literary feature of the number; and for fiction, in addition to the serials, "H. H." contributes a short story entitled "The Prince's Little Sweetheart." The poetry is by Edmund Gosse, John Vance Cheney, H. C. Bunner, and others.

Outing for May is as bright and entertaining as usual.



Theses due Monday.

It is expected that '89 will number three hundred men.

Thirty-eight men went down to Providence with the ball nine Tuesday, April 21.

The battalion was out last week, displaying their new colors, which were universally admired.

Gen. Pratt's next valuable circular is forthcoming, entitled "The Cosmogony of Nature's Laws."

The exams. of the fourth-year Miners come all in succession. Explanation: they have but one exam.

THE TECH requests copies of all class pictures that may be taken this spring, to be hung in its sanctum.

The second and last Glee Club concert took place last night at Chickering Hall. Too late for notice in this issue.

'87's theatre party to the French opera, a week ago last Monday, called forth severe criticism from some of the daily papers.

The Senior Miners and Chemists were very pleasantly entertained by Prof. and Mrs. Richards, on Thursday, April 28, in Jamaica Plain.

The third-year class in assaying, owing to the greatly increased facilities in the laboratory, have done a much greater number of assays than any previous class.

In the future, the *Century* will be issued on the first day of the month for which each number bears the date. The first edition of the May number will consist of 250,000 copies.

A bright looking little dog recently wandered into the room of the Biological department. It was clearly a case of disinterested self-sacrifice in the cause of science. Owner need not apply.

IN MINERALOGY. *Professor*: "The crystals of this mineral often attain great size. Specimens have been found weighing several hundred pounds. Mr. B. *will pass some around.*"

Prof. Whiting lectured to the Civils on Wednesday, April 29, upon the "Plane Table and its Uses." Prof. Whiting was instrumental in introducing the plane table into the Coast Survey.

Is it a proof of the rotundity of the earth, that when the much-abused dude approaches at a distance, you see his upper portion long before you see his legs?

The Institute was alive on Wednesday noon, April 22. The Senior class were photographed, and Daniel Pratt, G. A. T., lectured on the steps of the new building.

The Junior Mechanicals and Electricals on Saturday, May 2, made excursions to the Whittier Machine Company's boiler shops, and also to the Hinckley Locomotive Works, under the guidance of Prof. Lanza and Mr. Fitch.

A row of trees has been planted along the sidewalk, between Rogers and Kidder buildings, by the city forester. It is expected that the Freshman of '95 will pass too and fro from lectures, beneath the shade of stately elms.

Prof. Lanza's book on "Applied Mechanics" was on sale for the first time on Thursday, April 23. Since the book has been coming out for the last six months, this cannot be considered an unexpected event. Papyrographs must go.

It is reported that the engines were stopped for repairs recently, just as a professor of chemistry was going down on the elevator, and entrapped him for some time between two landings. His anxious friends finally heard his laments and by lowering a ladder rescued him from his suspense in mid-air.

The cotton machinery in the mechanical engineering laboratory has lately been run for the practical experience of the fourth-year class, under the direction of gentlemen in the cotton business at Lowell.

It would be a great boon to all the Mechanicals if an ice-water tank were placed in their drawing-room during the coming warm weather, as the lukewarm water from the faucets is not a particularly palatable beverage.

The person who, at a recent class supper, carried off, as a souvenir, part of the paraphernalia of one of the performers, would confer a great favor upon him by returning the same. The souvenir was presented to the performer, and therefore highly prized by him.

The fourth-year Mechanicals are having a course of talks by gentlemen not connected with the Institute, upon important practical subjects. Messrs. Hall, Mudge and Gowing speak about "Pumps"; Mr. Hill, of Hill, Clark & Co., about "Indicator Cards"; and it is hoped that Mr. J. C. Hoadley will be able to address the class upon some subject connected with his profession.

The problems which the Architects hung for judgment last week comprised designs for a grand staircase, school of architecture, porch to city house, and an exedra. On the whole it was one of the best exhibits of the year, some of the designs being exceptionally successful. The jury, consisting of Messrs. Rotch and Cabot, awarded a number of mentions on each problem.

The last boiler tests of the year took place at the shops Wednesday and Thursday of last week. The first day was devoted to the boilers, with calorimetric tests, and water, coal, air, temperature and pressure records. On the second day, observations on the boiler were made only to determine the water used by the Brown engine, from which cards were taken throughout the day.

Prominent among the happenings of the eventful week ending April 25 was the planting and dedication of the Sophomore class

tree. Near the spot which had so lately resounded with the blazing eloquence of Daniel Pratt, Mr. Cushing, in a stentorian voice, courageously read the dedication ode:—

"He spoke, and bowed; with muttering jaws,
The wondrous circle grinned applause."

The class president, as master of ceremonies, then consigned, with fitting allusion, the contributions of the several departments to the sacred cavity. Among them were the following: From the Biological laboratory, one defunct *Rana palustris*. From the Chemists, bottle hydrocyanic acid; the Civils, steel weight; Architects, T square; department of History, decorated plaque; Electricals, insulated wire; Mechanicals, supernumerary distender; the Institute, president's report, photographs, and papyrographs. It is to be regretted that the Freshman's doll baby did not arrive in time.

Each Sophomore then added his mite to the growing heap, swinging the shovel in true yeoman style; and with the singing of the class song, the impressive ceremony closed.

See, there it stands erect to heaven
All hail, fair tree of '87!

The following "narrations" are culled from the second-year physical geography department and are all warranted (?). (1) Our esteemed professor once stood under a cascade in Switzerland, where the sun was so hot that (the cascade being quite high) all the water was evaporated before it reached the ground, and men were making hay on the very spot where the cascade should have fallen! (2) In another locality in the Alps the wind blows so strongly that a cascade there is sometimes blown vertically upwards for several seconds, instead of falling down! (3) A certain cañon in Colorado is so deep that when there is a general rain, the first intimation any one at the bottom of the cañon has of it is the increase in the size of the stream, the water having had time to fall into the cañon at its shallow extremity and flow all the way down it before the rain at that point has reached the bottom. Competition from other departments is now invited.

The College World.

HARVARD — A new magazine, the *Harvard Literary Monthly*, is to be started next year by members of the Junior class. — The *Advocate* is to be increased by four additional pages, next year. — The lacrosse team is in good training, and expects to win the championship from Princeton. — Dewey, the anchor of the '86 tug-of-war team, is to anchor the Harvard team at Mott Haven this year.

COLUMBIA. — '85 School of Arts will graduate sixty men. — An illustrated paper, similar to the *Lampoon*, is being talked of. — The *Spectator* calls for subscriptions from the students and friends of the college for the Bartholdi Statue Pedestal Fund. — It is expected that the authorities of Columbia will reprint, in pamphlet form, the articles on King's and Columbia Colleges that appeared in the October and November numbers of *Harper's*. — Two new professorships have been established in the School of Mines; one of Analytical Chemistry, and the other of Assaying.

PRINCETON. — Princeton, with the team of '84 almost intact, is expected to take the inter-collegiate lacrosse championship. — A number of Princeton graduates have subscribed liberally for the improvement of the Princeton Athletic Grounds.

ELSEWHERE. — According to the new pamphlet just issued by the University of Michigan, the professors of that institution are paid less salary than those of any other college of its rank — President Gilman, of Johns Hopkins, favors a uniform system among American colleges in the conferring of degrees. — Johns Hopkins University is to join the Intercollegiate Cricket Association. — The University of Pennsylvania has one hundred and forty-seven instructors and one thousand and twenty-two students this year. — Boston University has six hundred and twenty students; one hundred and forty of them are women. — The tennis club of Yale has voted to join the National Lawn Tennis Association.



To Spring.

THOU fairy-footed Spring,
Lead on the brown-eyed Houris in bright array,
While elfin hands thy floral tributes bring;
For now I hear, like music far away,
Thy tuneful herald on the pendent spray,
With idly folded wing.

Now maidens in their teens
And youths that love to dream on flowering banks,
With fancies caught from pleasing rural scenes,
Will swell the horde of versifying cranks,
And reap rich harvests of returning "thanks"
From standard magazines.

Century.

A GIVE AWAY.

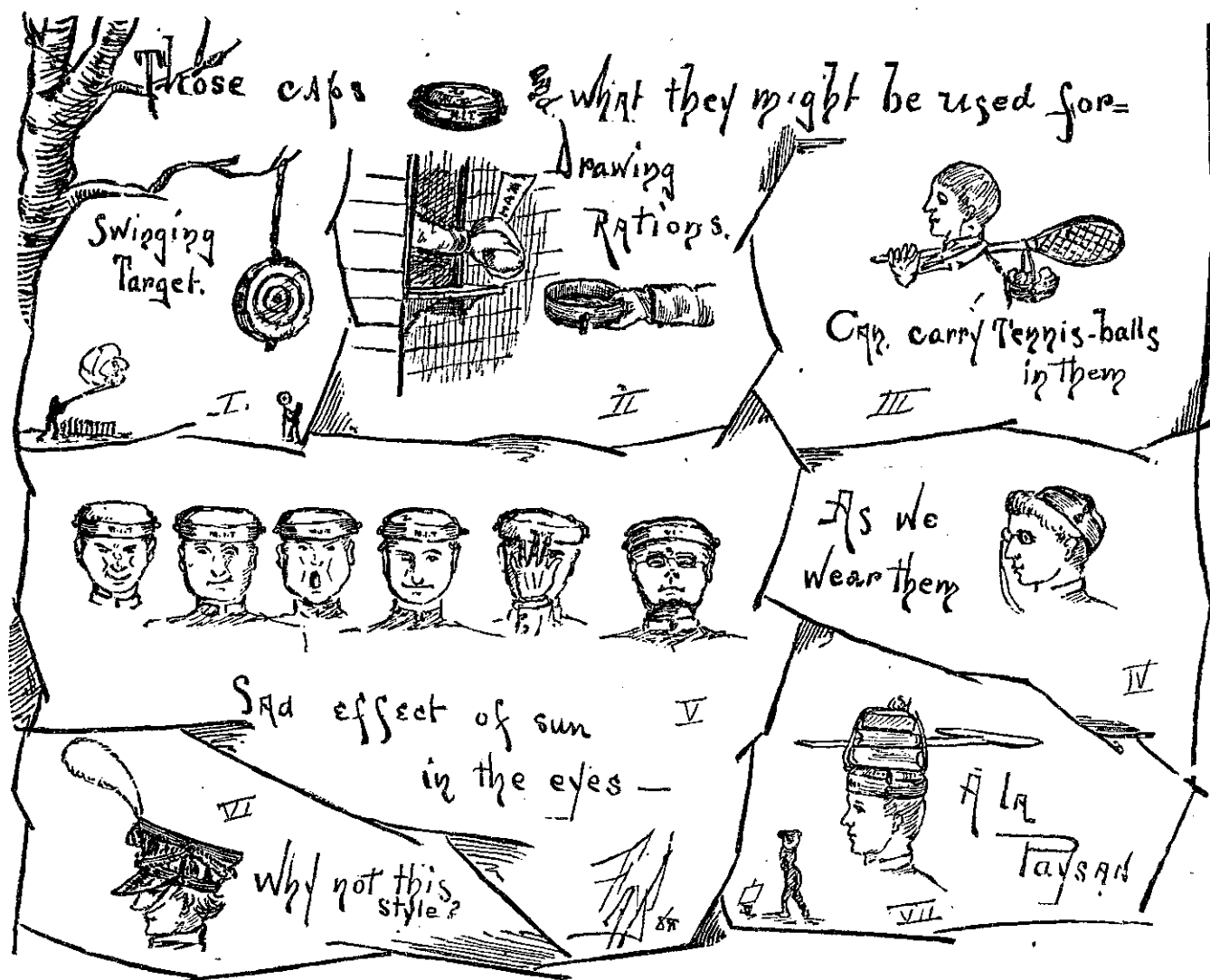
She: "There is my brother Fred; he's a lawyer, and awfully busy; one can never find him at his office, for he says he is always at the court."

He: "Yes; he is a member, you know; been playing with him all the afternoon. If I had had my own racquet, though, I should have made a better show." — *Life*.

An Australian naturalist has discovered the nervous system of sponges. It lies in the vicinity of the pocket-book. — *Life*.

"What is an overseer?" asked Lampy, as the ibis assumed his wonted position on the gas fixture. "An overseer, my boy," said the ibis, "is one who oversees, or rather overlooks, the best interests of the college." "Correct," remarked the jester; "now, can you tell me what a decision by the overseer is called?" "An oversight," twitted the irreverent bird. — *Harvard Lampoon*.

A Freshman got his mail from the rack, a few days ago, and spent an hour in the vestibule, reading it; it consisted of a *Harper's Young Folks*.



THINGS ONE WOULD RATHER HAVE LEFT UNSAID. — *Benevolent Old Gentlemen (to Youthful Bride of Elderly Cræsus)*: "My dear, I wish you many happy returns, with all my heart" — *Harvard Lampoon*.

Sunday-School Teacher: "And now, Tommy, what did the Israelites do when they came out of the Red Sea?"

Tommy (promptly): "They dried themselves."

She (who is literary): "Of late I have been enjoying the 'Lay of the Last Minstrel.' How do you like it?"

Country Cousin: — "Well, Sue, to give it to you real straight, I ain't taken in much of them minstrel businesses since old Dan Bryant eloped into future bliss." — *Columbia Spectator*.

Little Girl (only child): "I'm so glad, mamma, I don't live all the time at grandma's."

Mamma: "Why, my dear?"

Little Girl: "Well, it must be so dull there without me."

Cræsus Beckworthy, Sen. (to Mr. Ruskin De Vere, art critic): "Now, that's what I call a fine picture; shows remarkable talent. My daughter painted that, sir, and I would n't take two hundred dollars for it. Why, the paint, alone, cost a hundred and fifty." — *Harvard Lampoon*.

A LOGICAL SEQUENCE. — *Mr. Brown*: "Miss Gray, allow me to present my friend, M. L'Oiseau, of the Canary Islands."

Miss Gray: "How delightful! You sing, of course." — *Life*.

Elsie (seeing for the first time a calf): "Oh! mamma! These must be the little cows that give condensed milk." — *Life*.

"A scientist says that the way to sleep is to think of nothing," read Mrs. Smith, in a newspaper. "If that be true, I should say that you would sleep all the time, my dear," said her husband. "No doubt, Mr. Smith, for I think a great deal of you." — *Ex*.

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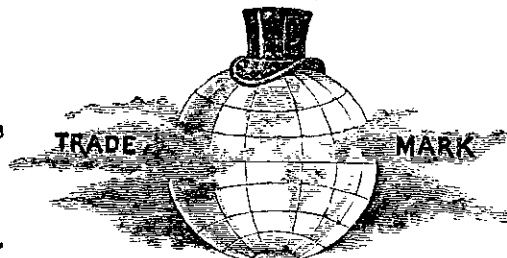
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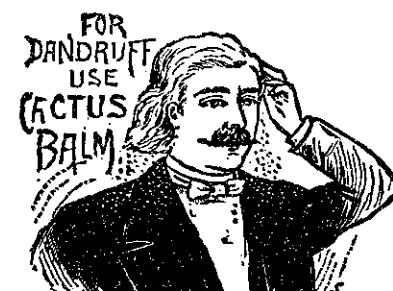
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THE Union Square Theatre Company is now playing a farewell engagement at the Bijou Theatre. The company will be disbanded this month, and its worthy productions of "One Touch of Nature," and "Three Wives to One Husband," merit the present crowded houses.

MR. FRANK MAYO has an engagement at Boston Theatre this week. He plays "Nordeck," a piece which has been successfully played in other parts of the country, and is now presented for the first time in this city.

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Besides the above distinctly professional courses, the Institute offers scientific courses of a less technical character, designed to give students a preparation for business callings. A four years' course in biology, chemistry, and physics has been established, as preparatory to the professional study of medicine.

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Graduates of colleges conferring degrees are presumed to have the necessary qualifications for entering the third-year class in any of the regular courses of the Institute, and will be so admitted provisionally, on the presentation of their diplomas.

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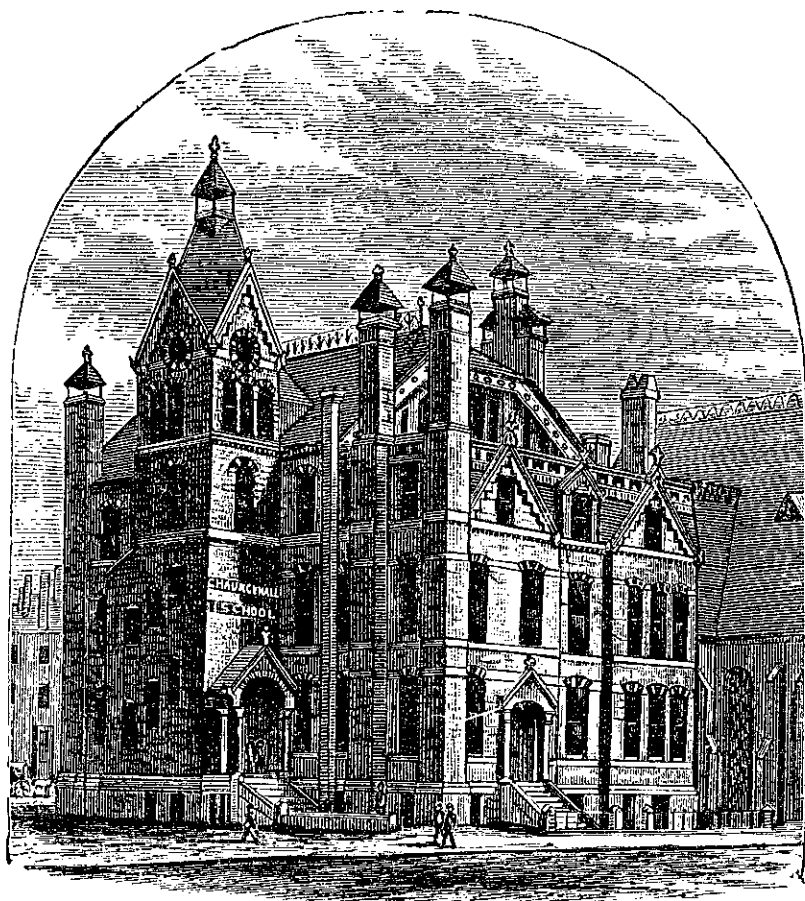
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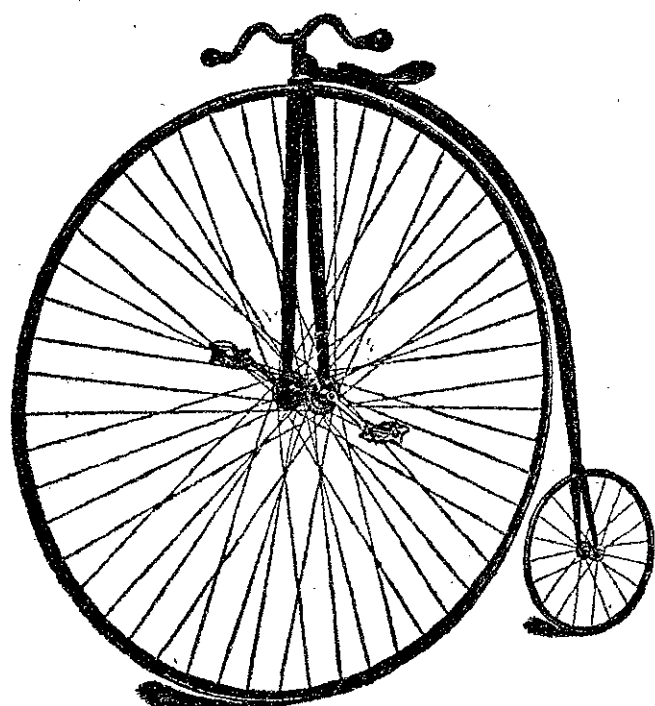
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